

IN THE CLAIMS

Please amend the claims as follows where a copy of the claims with the amendments delineated are set forth below in accordance with the PTO guidelines. This listing of claims will replace all prior versions, and listings, of claims in this application.

Listing of Claims

1-10 (Cancelled)

11. (New) A method for the optimization of multi-objective problems using evolutionary algorithms, the method comprising the steps of:
setting up an initial population as parents;
reproducing the parents to create a plurality of offspring individuals, the individuals representing object parameters to be optimized;
evaluating the quality of the offspring individuals by means of a fitness function, wherein the fitness function is composed of the sum of weighted sub-functions that represent an objective;

selecting the one or more offspring having the highest evaluated quality value as parents for the next evolution cycle, characterized in that for each sub-function of the fitness function, an interval is defined within which the weight of the associated sub-function is allowed to change;
wherein weight intervals of different sub-functions have different values to reflect different priorities of the underlying objectives; and

during the optimization the weights for the sub-functions are changed dynamically respectively within the predefined interval for every weight.

12. (New) The method of claim 11, further comprising the step of:
converting human preferences represented by linguistic preference relations into parameterized, real-valued preference relations to generate the intervals defining the allowed range of weight changes.

13. (New) The method of claim 12, further comprising the step of:
converting the parameterized preference relations into real-valued intervals by letting the parameters take all the allowed value instead of assigning one specific value to each parameter.

14. (New) The method of claim 11, wherein the weights for the different objectives are randomly re-distributed within the defined intervals among the different offspring individuals in each generation.

15. (New) The method of claim 11, further comprising the step of:
gradually changing the weights for the different objectives gradually within the defined intervals with the proceeding of optimization.

16. (New) The method of claim 15, further comprising the step of:
changing the weights within the intervals according to a periodic function.

17. (New) The method of claim 15, wherein each offspring has the same weight in the same generation.

18. (New) The method of claim 15, wherein the periodic change has the shape of a sine function applied on the generation number.

19. (New) The method of claim 11 further comprising the step of:

calculating an outlet angle by a Navier-Stokes solver and geometric constraints to optimize for optimizing aerodynamic or hydrodynamic bodies.

20. (New) A computer software program for implementing a method according to claim 1 when run on a computing device.